

CLAIMSWHAT IS CLAIMED:

1. A method for controlling an implantable medical device, the method comprising:
detecting the presence of a magnetic field proximate to the implantable medical device so
as to exceed a first preselected magnetic field threshold;
determining if a strength of the detected magnetic field exceeds a second preselected
magnetic field threshold, the second preselected magnetic field threshold being
greater than the first preselected magnetic field threshold; and
adjusting a stimulation rate provided by the implantable medical device providing that the
strength of the detected magnetic field exceeds the second preselected magnetic
field threshold.
2. The method of claim 1, wherein adjusting a stimulation rate provided by the
implantable medical device further comprises:
adjusting a stimulation rate in which the implantable medical device stimulates a heart.
3. The method of claim 1, wherein determining if a strength of the detected magnetic
field exceeds a second preselected magnetic field threshold further comprises:
comparing the strength of the detected magnetic field to a second preselected magnetic
field threshold stored in a memory of the implantable medical device; and
determining if the strength of the detected magnetic field exceeds the second preselected
magnetic field threshold stored in the memory.
4. The method of claim 2, further comprising:
ascertaining a spontaneous or stimulated heart rate of the heart prior to detecting the
presence of the magnetic field; and
storing the spontaneous or stimulated heart rate in a memory.
5. The method of claim 4, further comprising:
determining a predetermined incremental factor as a function of the stored spontaneous
or stimulated heart rate.

40059556 016906

-14-

6. The method of claim 5, wherein determining a predetermined incremental factor as a function of the stored spontaneous or stimulated heart rate further comprises:

- determining a predetermined incremental factor as a percentage of the stored spontaneous or stimulated heart rate.

7. The method of claim 5, wherein adjusting a stimulation rate provided by the implantable medical device further comprises:

- adding the predetermined incremental factor to the stored spontaneous or stimulated heart rate to produce an adjusted stimulation rate provided by the implantable medical device.

8. The method of claim 7, further comprising:
maintaining stimulation of the heart at the adjusted stimulation rate until the detected magnetic field is no longer detectable.

9. An implantable medical device, comprising:
a detector for detecting the presence of a magnetic field, the presence of the magnetic field being detected in response to the strength of the magnetic field exceeding a first preselected magnetic field threshold; and
a processor for adjusting a stimulation rate provided by the implantable medical device in response to determining that the strength of the detected magnetic field exceeds a second preselected magnetic field threshold, the second preselected magnetic field threshold being greater than the first preselected magnetic field threshold.

10. The device of claim 9, wherein the processor is further adapted to adjust a stimulation rate in which the implantable medical device stimulates a heart.

11. The device of claim 9, wherein the processor is further adapted to compare the strength of the detected magnetic field to the second preselected magnetic field threshold stored in a memory of the implantable medical device.

2025-04-29 09:56:50

-15-

12. The device of claim 10, wherein the processor is further adapted to ascertain a spontaneous or stimulated heart rate of the heart and store the spontaneous or stimulated heart rate in a memory.

13. The device of claim 12, wherein the processor is further adapted to determine a predetermined incremental factor as a function of the stored spontaneous or stimulated heart rate.

14. The device of claim 13, wherein the processor is further adapted to determine the predetermined incremental factor as a percentage of the stored spontaneous or stimulated heart rate.

15. The device of claim 13, wherein the processor is further adapted to add the predetermined incremental factor to the stored spontaneous or stimulated heart rate to produce the adjusted stimulation rate provided by the implantable medical device.

16. The device of claim 15, wherein the processor is further adapted to maintain stimulation of the heart at the adjusted stimulation rate until the detected magnetic field is no longer detectable.

17. The device of claim 9, wherein the implantable medical device is a pacemaker.

18. The device of claim 9, wherein the magnetic field is produced by a magnetic resonance imaging (MRI) device.

19. The device of claim 14, wherein the percentage of the stored spontaneous or stimulated heart rate comprises ten percent of the stored spontaneous or stimulated heart rate.

20. The device of claim 12, wherein the adjusted stimulation rate is a function of the spontaneous or stimulated heart rate.

10059556-015500

-16-

21. A method for controlling a pacemaker, the method comprising:
detecting the presence of a magnetic field proximate to the pacemaker so as to exceed a first preselected magnetic field threshold;
determining if a strength of the detected magnetic field exceeds a second preselected magnetic field threshold, the second preselected magnetic field threshold being greater than the first preselected magnetic field threshold; and
adjusting a stimulation rate in which the pacemaker stimulates a heart providing that the strength of the detected magnetic field exceeds the second preselected magnetic field threshold.
22. A method for controlling an implantable medical device, the method comprising:
determining if a high frequency (HF) radiation interference signal proximate to the implantable medical device exceeds a preselected HF radiation threshold; and
adjusting a stimulation rate provided by the implantable medical device providing that the strength of the detected HF radiation interference signal exceeds the preselected HF radiation threshold.
23. The method of claim 22, wherein adjusting a stimulation rate provided by the implantable medical device further comprises:
adjusting a stimulation rate in which the implantable medical device stimulates a heart.
24. The method of claim 23, further comprising:
ascertaining a spontaneous or stimulated heart rate of the heart prior to detecting the presence of the magnetic field; and
storing the spontaneous or stimulated heart rate in a memory.
25. The method of claim 24, further comprising:
determining a predetermined incremental factor as a function of the stored spontaneous or stimulated heart rate.

10055000 "01E300E

26. The method of claim 25, wherein determining a predetermined incremental factor as a function of the stored spontaneous or stimulated heart rate further comprises:

determining a predetermined incremental factor as a percentage of the stored spontaneous or stimulated heart rate.

27. The method of claim 25, wherein adjusting a stimulation rate provided by the implantable medical device further comprises:

adding the predetermined incremental factor to the stored spontaneous or stimulated heart rate to produce an adjusted stimulation rate provided by the implantable medical device.

28. The method of claim 27, further comprising:
maintaining stimulation of the heart at the adjusted stimulation rate until the preselected
HF radiation threshold is no longer exceeded.

29. An implantable medical device, comprising:

a detector for detecting the presence of a high frequency (HF) radiation interference signal; and

a processor for adjusting a stimulation rate provided by the implantable medical device in response to determining that the strength of the detected HF radiation interference signal exceeds a preselected HF radiation threshold.

30. The device of claim 29, wherein the processor is further adapted to adjust a stimulation rate in which the implantable medical device stimulates a heart.

31. The device of claim 30, wherein the processor is further adapted to ascertain a spontaneous or stimulated heart rate of the heart and store the spontaneous or stimulated heart rate in a memory.

32. The device of claim 31, wherein the processor is further adapted to determine a predetermined incremental factor as a function of the stored spontaneous or stimulated heart rate.

THE **NEW** **YORK** **PUBLIC** **LIBRARY**

33. The device of claim 32, wherein the processor is further adapted to determine the predetermined incremental factor as a percentage of the stored spontaneous or stimulated heart rate.

34. The device of claim 32, wherein the processor is further adapted to add the predetermined incremental factor to the stored spontaneous or stimulated heart rate to produce the adjusted stimulation rate provided by the implantable medical device.

35. The device of claim 34, wherein the processor is further adapted to maintain stimulation of the heart at the adjusted stimulation rate until the preselected HF radiation threshold is no longer exceeded.

36. The device of claim 29, wherein the implantable medical device is a pacemaker.

37. The device of claim 29, wherein the HF radiation interference signal is produced by at least one of a radar and a high power radio transmitter.

38. The device of claim 33, wherein the percentage of the stored spontaneous or stimulated heart rate comprises ten percent of the stored spontaneous or stimulated heart rate.

39. The device of claim 31, wherein the adjusted stimulation rate is a function of the spontaneous or stimulated heart rate.

40. A method for controlling an implantable medical device, the method comprising:

- detecting if a magnetic field is proximate to the implantable medical device;
- determining if a strength of the magnetic field exceeds a preselected magnetic field threshold providing the magnetic field is detected;
- detecting if a high frequency (HF) radiation interference signal is proximate to the implantable medical device;
- determining if a strength of the HF radiation interference signal exceeds a preselected HF radiation threshold providing the HF radiation interference signal is detected; and
- adjusting a heart stimulation rate provided by the implantable medical device providing that either the strength of the detected magnetic field exceeds the preselected

-19-

magnetic field threshold or the detected HF radiation interference signal exceeds the preselected HF radiation threshold.

41. An implantable medical device, comprising:
- a first detector for detecting the presence of a magnetic field;
 - a second detector for detecting the presence of a high frequency (HF) radiation interference signal; and
 - a processor for adjusting a heart stimulation rate provided by the implantable medical device in response to determining that the strength of the detected magnetic field exceeds a preselected magnetic field threshold or the strength of the detected HF radiation interference signal exceeds a preselected HF radiation threshold.

100595506 012906